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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/716,892

11/19/2003

Karl W. Koch III

SP03-162

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EXAMINER

RAHLL, JERRY T

ART UNIT

PAPER NUMBER

2874

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

12/18/2006

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/716,892

Applicant(s)

KOCH ET AL.

Examiner

Jerry T. Rahll

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19-21 is/are allowed.
- 6) ☒ Claim(s) 1,4,6-9,16 is/are rejected.
- 7) ☒ Claim(s) 2,3,5,10-15,17 and 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1, 4, 6-9 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,600,597 to Beeson in view of U.S. Patent Application No. 2003/0174986 to Forbes et al.

4. Beeson describes an apparatus having a band gap light guidance region (14), a microstructure (16) disposed adjacent to the guidance region for enhancing light guidance and a plurality of active gain material (12) disposed in an interface area between the guidance region and the microstructure, for providing active gain to the light guidance region (see Figure 1 and Columns 4-5). Beeson does not describe the light guidance region having a hollow void.

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5. Forbes et al. describes a device having a band gap guidance region with a hollow void (340) and a microstructure (320, 322) disposed adjacent to the hollow void for enhancing light guidance.

6. Beeson and Forbes et al. are analogous art form the same field of endeavor of light guiding. At the time of invention, it would have been obvious to a person of ordinary skill in the art to use the hollow void core of Forbes et al. with the apparatus of Beeson. The motivation for doing so would have been to allow for low loss signal propagation (see Forbes et al. at Paragraph [0008]). Therefore, it would have been obvious to combine Beeson with Forbes et al. to obtain the invention as specified in Claim 1.

7. Further, Beeson describes the microstructure having a plurality of apertures. Beeson does not specifically describe the apertures as providing a void-filling fraction in a range from 0.4 to 1.0. However, it is well-known in the art that the actual set-up of microstructures are chosen to affect certain wavelengths. Therefore, it would have been obvious to one of ordinary skill in the art to use apertures as providing a void-filling fraction in a range from 0.4 to 1.0 (as shown by Forbes et al.).

8. Further, Beeson describes the microstructure comprising an active periodic two dimensional dielectric structure of a first periodicity having a plane of periodicity (perpendicular to the view of Figure 1), having an active element and configured to produce a photonic band gap and the active periodic two dimensional dielectric structure pumped by an excitation source to provide optical gain at the wavelength of the first band gap region in a direction perpendicular to the plane of periodicity (see Figure 1 and Columns 4-5).

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9. Further, Beeson does not specifically describe a second periodic structure of a second periodicity. However, it is well-known in the art to use such second layers of structures to further confine guided light (as shown by Forbes et al.). Therefore, it would have been obvious to one of ordinary skill in the art to create such a structure of a second periodicity in the device of Beeson.

10. Further, Forbes et al. describes the hollow void creating a photonic defect state within the first band gap region (see paragraphs 0030-034).

11. Further, Beeson describes the active element as a rare earth element (see Column 4).

12. Further, while Beeson does not specifically describe the microstructure area as about 10-300% greater than the interface area. However, Figure 1 of Beeson seems to suggest an area relationship falling within that range.

Allowable Subject Matter

13. Claims 19-21 are allowed.

14. Claims 2-3, 5, 10-15 and 17-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15. Claims 2-3 describe the device emitting a second guided mode at a second frequency of a second range of frequencies.

16. Claim 5 describes the ratio of the numerical value of the defect to the pitch selected as to interact with the excitation of surface modes within the photonic band gap.

17. Claims 10 and 17-18 describe the defect state as supporting at least one surface mode.

18. Claim 11 describes the microstructure comprising a Bragg photonic band gap fiber.

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19. Claims 12-15 and 19-21 describe the second periodic structure having a second void-filling fraction.

20. This is subject matter not described by the prior art in conjunction with the further limitations of the present claims.

Response to Arguments

21. Applicant's arguments filed September 29, 2006 have been fully considered but they are not persuasive. Applicant argues that there is no motivation to combine Beeson and Forbes and, further, that Beeson teaches away from such combination. The examiner appreciates the Applicant's discussion of the primary factors involved in amplifier design. However, even though reduction of loss is not a primary design concern with respect to optical amplifiers, loss must be considered on some level in the design of any optical component. Therefore, methods and means for reducing loss are relevant to the design of all optical components, including amplifiers. Regarding Applicant's assertion that Beeson teaches away from combination with Forbes, the examiner respectfully disagrees. While Beeson does discuss the importance of a large gain medium, Beeson does not describe any consideration of loss characteristics. A references silence on a subject may not be construed as evidence of "teaching away".

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

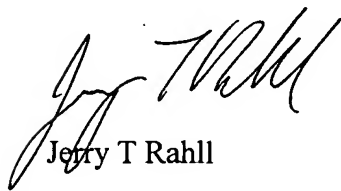
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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry T. Rahll whose telephone number is (571) 272-2356. The examiner can normally be reached on M-Th (8:30-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Jerry T Rahll


MICHELLE CONNELLY-CUSHMAN
PRIMARY EXAMINER
12/11/06